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Availability of Single Channel seismic refraction profiles collected over U.S. Atlantic Continental Slope and Rise north of Cape Hatteras - USGS cruises FAY 20 and FAY 21 - August/September, 1976.

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U.S. Geological Survey

Open File Report

79-578

A series of single channel seismic reflection profiles were collected by the U.S. Geological Survey aboard the R.V. FAY from August 10, 1976 through September 7, 1976 during cruises FAY 20 and FAY 21. The chief scientist was Dr. Kim D. Klitgord, U.S. Geological Survey, Woods Hole, MA 02543. The profiles are located on the slope and rise between Cape Hatteras and the New England Seamounts and include 10 profiles which are roughly perpendicular to the continental margin and 4 long profiles which are parallel to the margin. Single channel seismic reflection profiles are available on all of the profiles indicated on the accompanying figure with the exception of FAY 21-5 and FAY 21 - 10. Approximately 5,850 km of seismic reflection data were collected. These profiles complement and extend to the northeast the grid of seismic profiles collected on the cruise FAY 19 (open file report#?). The seismic profiles collected on cruises FAY 19, FAY 20 and FAY 21 tie in the U.S. Geological Survey grid of multichannel seismic reflection profiles and the IPOD/USGS multichannel profile on the continental shelf, slope and upper rise with the DSDP holes # 105,106 and 388.

Single Channel Seismic Reflection System

Single channel seismic reflection profiles were collected using a Seismic Engineering Inc. streamer with 40 acceleration cancelling multidyne (MDS) hydrophone transducers in a single active element of 300 foot length. The streamer has a 100 foot stretch section with up to 400 feet of faired lead-in cable. Normally, between 200-300 feet of lead-in cable were deployed. A depth transducer at the head of the active section allows the streamer depth to be measured; normally, it was towed at a depth of 35 to 40 feet.

Four airguns of variable chamber capacity were available (2 each PAR600B with 20 to 40 in^3 chambers and 2 each PAR1900C with 80 or 160 in^3 chambers). During FAY 20 and 21, one 40 in^3 gun was usually used on the shelf, while the 80 or 160 in^3 guns were used in deeper water.

Filter settings for deep water work were usually between 16-60 Hz with 3 to 4 seconds of penetration frequently being obtained. The recorders were on a 5 second sweep on most occasions with up to a 5 second delay in deep water. Firing rates varied between 10 and 11 seconds.

Generally speaking, the single channel reflection profiles for FAY 20 and 21 were outstanding with excellent resolution of basement and the deeper Mesozoic horizons throughout the Western Atlantic.

Two types of airgun records were obtained during the cruise. The primary record was made on a Raytheon Recorder with AGC (automatic gain control), which allowed deeper horizons to be resolved. A second recorder, Raytheon was used to produce a record without AGC and to act as a spare recorder. On FAY 21 the system was modified again to take the seismic information off of the read head on the tape recorder which was recording all of the seismic information. This was played out on the secondary Raytheon recorder. In this manner we were able to check what was going on to magnetic tape.

The seismic data was recorded on 3600 ft analog tapes on a 7-track Honeywell System, with the data including times, airgun trigger, filtered airgun seismic data, unfiltered airgun seismic data and minisparker seismic data.

Navigation

Integrated Navigation System (INS) - A new Integrated Navigation System was installed aboard the R/V FAY during February. This system was contracted through Western Geophysical Inc. and contains the following major sybsystems:

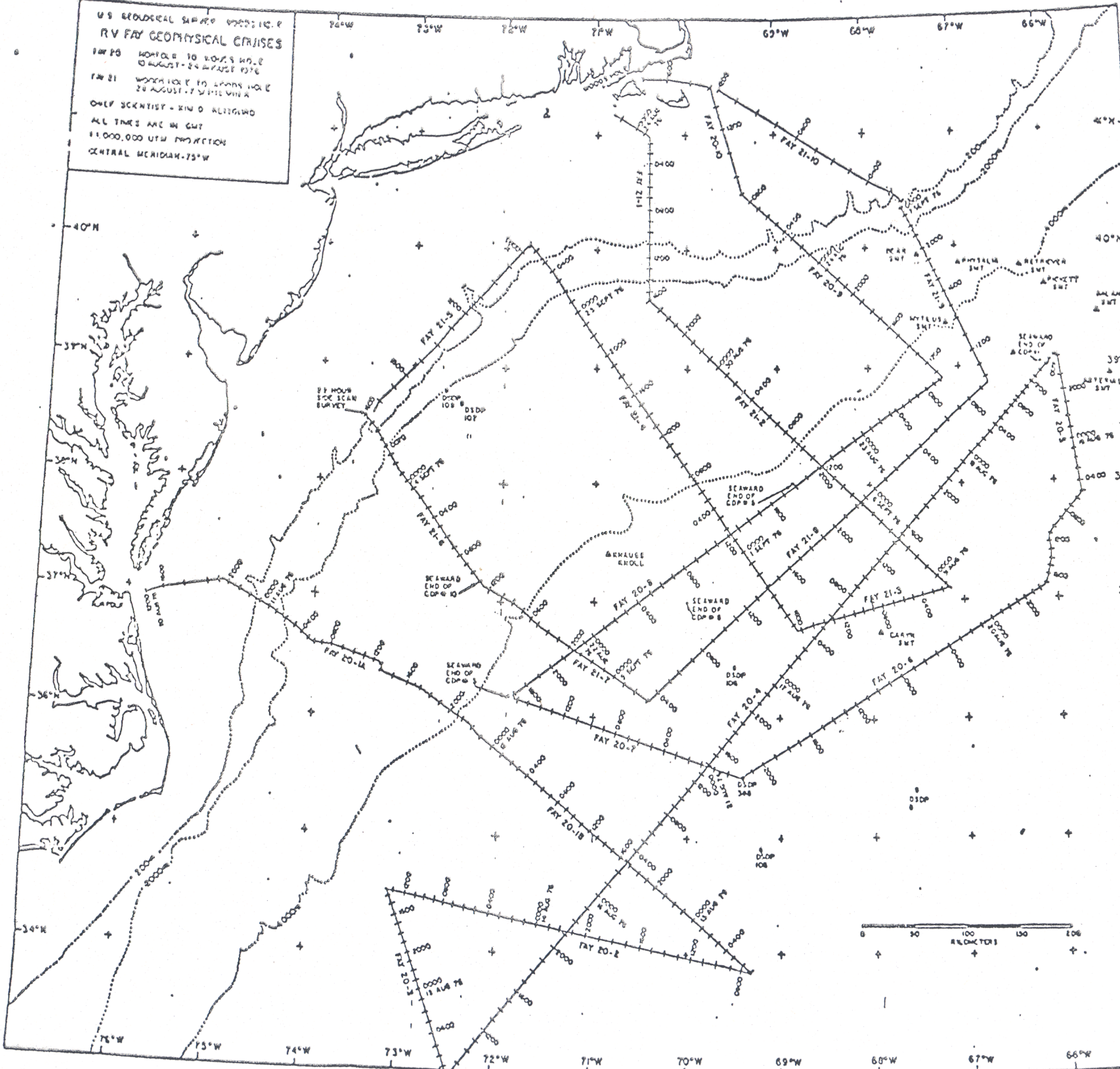
a. Satellite Receiver
b. Teledyne Range-Range LORAN C unit
c. Rubidium Frequency Standard
d. Doppler Sonar - not installed
e. Mark 29 gyrocompass
f. Hewlett Packard 21 MX computer system
g. Two 9-track digital tape transports
h. Calcomp 30 inch plotter
i. Keyboard and line printers.

Other Data

In addition to the airgun seismic reflection data, 600 joule minisparker seismic data, magnetic data and gravity data were collected and stored on tape.

Seismic Data Availability

General information for the cruises FAY 20 and FAY 21 may be obtained from the chief scientist, Dr. Kim D. Klitgord, U.S. Geological Survey, Woods Hole, MA 02543 and original copies of the seismic records and magnetic tapes are on file at the U.S. Geological Survey office at Woods Hole, MA. Microfilm copies of the seismic profiles may be purchased from the National Geophysical and Solar-Terrestrial Data Center (NGSDC), in Boulder, Colorado 80302.



RV FAY GEOPHYSICAL CRUISES
ALL TIMES ARE IN GMT
CENTRAL MERIDIAN-75°W
FAY 20-2
FAY 20-3
FAY 20-4
FAY 20-6
FAY 20-7
FAY 20-8
FAY 20-9
FAY 20-10
FAY 20-14
FAY 20-18
FAY 21-2
FAY 21-3
FAY 21-5
FAY 21-6
FAY 21-7
FAY 21-8
FAY 21-10
SEAWARD END OF CDP # 8
SEAWARD END OF CDP # 10
KRAUSE KNOLL
KILOMETERS
40°N
39°N
38°N
37°N
36°N
35°N
34°N
75°W
74°W
73°W
72°W
71°W
70°W
69°W
68°W
67°W
66°W